

Strength and Balance Exercises to Improve Functional Outcomes and Mobility for a Patient with Parkinson's Disease and Co-Morbidities: A Case Report



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Background and Purpose

- Parkinson's disease is the second most common age-related neurodegenerative disorder after Alzheimer's disease.¹
- Cardinal features include rigidity, bradykinesia, tremor and postural instability.²
- There is a lack of literature pertaining to the physical therapy management of patients with Parkinson's Disease and other co-morbidities.
- Purpose: To illustrate the physical therapy management of a patient with Parkinson's disease and other co-morbidities.

Case Description

- 69-year-old male
- Diagnosed with Parkinson's disease one week prior to initial evaluation
- History of Lyme disease, Agent Orange exposure, hypertension, peripheral neuropathy, osteoarthritis and Post-Traumatic Stress Disorder

Examination

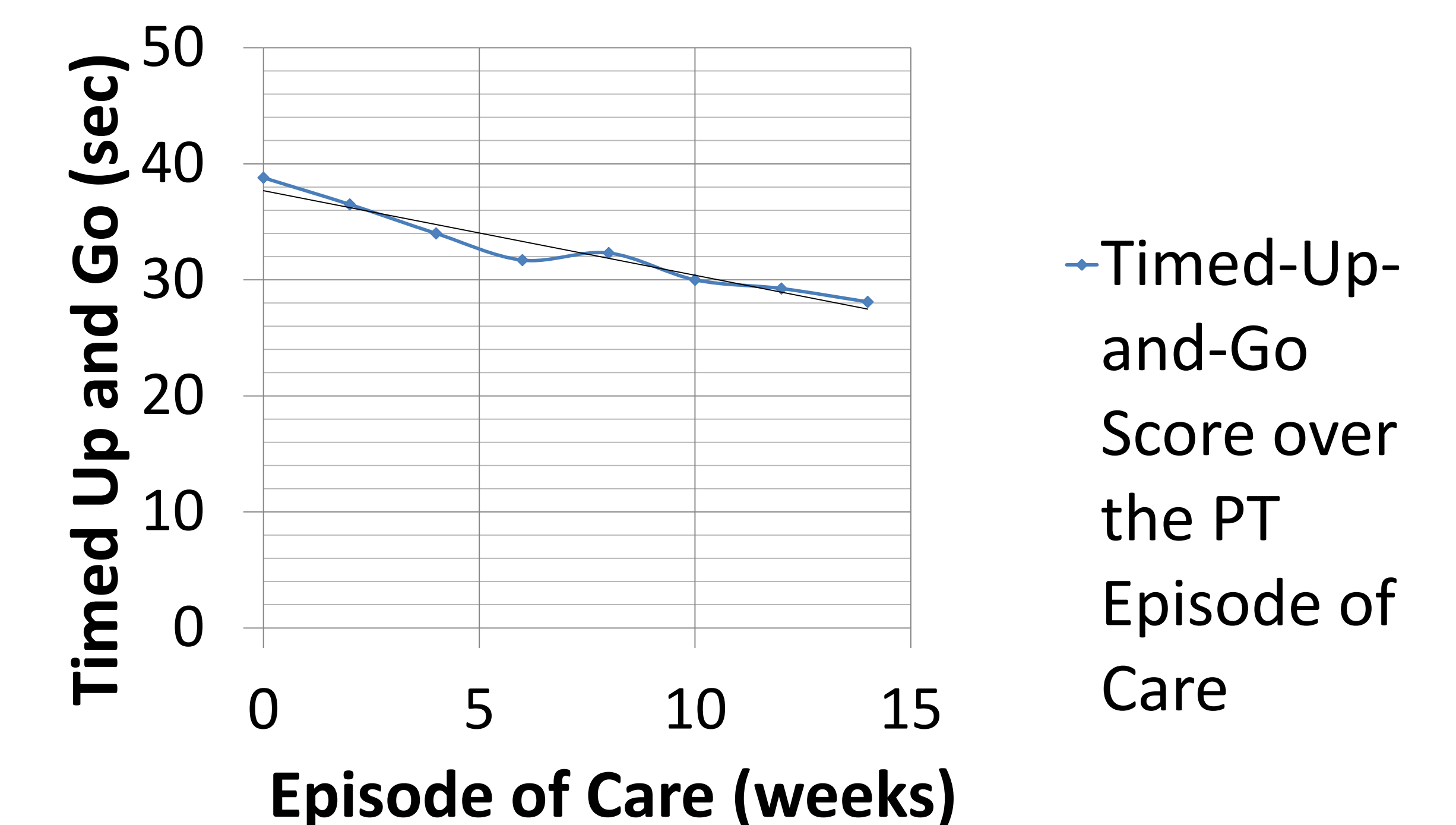
- Impaired with upper and lower extremity Manual Muscle Testing
- Impaired static standing balance
- Impaired coordination and sensation.
- Gait Assessment
- Timed-Up-and-Go and Patient Specific Functional Scale

Interventions

Interventions	Weeks 1-3	Weeks 4-6	Weeks 7-11	Weeks 12-14
Recumbent Bike : 10 min	Level 1			
Treadmill: 10 min			1.7 mph	2.0 mph
Low Row: 3x15	10 lb. cable	20 lb. cable	25 lb. cable	30 lb. cable
Balance Board (forward/backward)	3x30 sec each direction			
Walking forward/retro cable machine: 3x15	5 lb.	15 lb.	20 lb.	25 lb.
Total Gym (squats/calf raises): 2x15 each	Level 8	Level 10		Level 12
Isometric hip Abd./Add.	3x15, 5 sec hold			
Table Squats (no hands) 3x10	Body weight	5 lb. dumbbell		10 lb. dumbbell
Standing 3-way (hip Flex., Abd., Ext.) 3x10	2 lb. dumbbell each direction		4 lb. dumbbell each direction	
Supine Bridges		3x15, 2 sec. holds		
Side-stepping: Red theraband (slalom, sideways)		3x 15 each way		
Semi-tandem balance) 4x1 min		Flat surface		Foam Pad
Step-ups (forward, left/right); 3x10		6 in. step		8 in. step
Pulley (ER., Flex., IR., Abd.) 3x15			ER./IR.: 0.5 kg.; Flex./Abd.: 1.0kg	
Partial Lunges			3x15	

Outcomes

- Strength 5/5 for all muscle testing except for shoulder abduction, elbow extension/flexion
- Decreased hypermetria
- Balance times improved in all four stances
- Timed-Up-and-Go changed from 38.80 to 31.3
- Patient Specific Functional Scale, sensation and gait remained unchanged



Discussion

- Therapy programs with strengthening and balance may yield positive results.
- Progress may have been hindered by medications and shoulder injury.
- Further investigation on different therapy programs would be beneficial.

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References

1. Wirdefeldt K, Adami H, Cole P, Trichopoulos D, Mandel J. Epidemiology and etiology of Parkinson's disease: A review of the evidence. *Eur J Epidemiol.* 2011; 26(S1): 1-58. doi: 10.1007/s10654-011-9581-6.
2. O' Sullivan SB, Schmitz TJ, Fulk G. *Physical Rehabilitation.* 5th ed. Philadelphia PA. F.A. Davis; 2007: 121- 226



A. Patient warming-up on recumbent bike



B. Patient performing functional strengthening and balance training